CLAIMS:

1. Method (100; 200; 300; 400; 500) for scanning a track of a disc-shaped storage medium (2), the method comprising the steps of:

receiving (101; 201; 301; 401; 501) at least one scanning command;

calculating (102, 103; 211, 212; 311, 313; 411; 511) energy consumption estimates at different scanning mode settings (CAV; CLV);

determining (110; 213; 312, 314, 320; 412; 512) a scanning mode setting associated with minimal expected energy consumption;

executing (121, 122; 221, 222; 321, 322; 421; 521) said at least one scanning command at the thus determined scanning mode setting.

2. Method (100; 200) according to claim 1, the method comprising the steps of:

receiving (101; 201) one scanning command;

calculating (102; 211) the estimated amount of energy (E_L) consumed when this scanning command is executed in CLV mode;

calculating (103; 212) the estimated amount of energy (E_A) consumed when this scanning command is executed in CAV mode;

determining (110; 213) which scanning mode (CLV; CAV) is most energy-efficient for executing this scanning command;

executing (121, 122; 221, 222) this scanning command in the most energy-efficient scanning mode (CLV; CAV).

3. Method (200) according to claim 2, wherein the scanning command is associated with a completion time limit (T_{LIMIT}), the method further comprising the steps of:

calculating (202) the estimated completion time (t_L) when this scanning command is executed in CLV mode;

calculating (203) the estimated completion time (t_A) when this scanning command is executed in CAV mode;

examining (204) if any of the estimated completion times (t_L; t_A) exceeds the completion time limit (T_{LIMIT});

determining (230), if it is found that any of the estimated completion times (t_L; t_A) exceeds the completion time limit (T_{LIMIT}), which scanning mode (CLV; CAV) is most time efficient for executing this scanning command, and executing (231, 232) this scanning command in the most time efficient scanning mode (CLV; CAV).

4. Method (300) according to claim 1, the method comprising the steps of:

receiving a plurality of n scanning commands, and placing these scanning commands in a queue buffer memory (301, 302, 303);

calculating (311), for each of all n! possible execution orders of these n scanning commands, the corresponding estimated amount of energy ($E_L(i)$) consumed when these scanning commands are executed in CLV mode in the respective execution order(i);

calculating (313), for each of all n! possible execution orders of these n scanning commands, the corresponding estimated amount of energy ($E_A(i)$) consumed when these scanning commands are executed in CAV mode in the respective execution order(i);

determining (312, 314, 320) which combination of execution order and scanning mode is most energy-efficient for executing these n scanning commands;

executing (321, 322) these n scanning commands, using the most energy-efficient combination of execution order and scanning mode (CLV; CAV).

5. Method according to claim 4, wherein said determining (312, 314, 320) step comprises the steps of:

determining (312) which one of said n! possible execution orders is most energy-efficient for executing said n scanning commands in CLV mode, and determining the corresponding minimal energy consumption ($E_{L,MIN}$) expected;

determining (314) which one of said n! possible execution orders is most energy-efficient for executing said n scanning commands in CAV mode, and determining the corresponding minimal energy consumption ($E_{A,MIN}$) expected;

comparing (320) the thus calculated minimal energy consumption ($E_{L,MIN}$) for CLV mode with the thus calculated minimal energy consumption ($E_{A,MIN}$) for CAV mode.

6. Method according to claim 4, wherein the set of n scanning commands is associated with an overall completion time limit, and wherein, in the step of determining (312, 314, 320) the most energy-efficient combination of execution order and scanning mode,

only those combinations are taken into account which comply with such an overall completion time limit.

7. Method according to claim 4, wherein at least one of the scanning commands is associated with an individual completion time limit, and wherein, in the step of determining (312, 314, 320) the most energy-efficient combination of execution order and scanning mode, only those combinations are taken into account which comply with such an individual completion time limit.

8. Method (400) according to claim 1, the method comprising the steps of:

receiving a plurality of n scanning commands, and placing these scanning commands in a queue buffer memory (401, 402, 403);

calculating (411), for each of all 2^n possible combinations of individual scanning mode settings (CAV, CLV) for these n scanning commands, the corresponding estimated amount of energy ($E_{EX}(i)$) consumed when these scanning commands are executed in the order as received and stored in the queue;

determining (412) which combination of individual scanning mode settings (CAV, CLV) for these n scanning commands is most energy-efficient for executing these n scanning commands in the order as received and stored in the queue;

executing (421) these n scanning commands in the order as received and stored in the queue, using the most energy-efficient combination of individual scanning mode settings (CAV, CLV) for these n scanning commands.

9. Method according to claim 8, wherein the set of n scanning commands is associated with an overall completion time limit, and wherein, in the step of determining (412) the most energy-efficient combination of individual scanning mode settings, only those combinations are taken into account which comply with such an overall completion time limit.

10. Method according to claim 8, wherein at least one of the scanning commands is associated with an individual completion time limit, and wherein, in the step of determining (412) the most energy-efficient combination of individual scanning mode settings, only those combinations are taken into account which comply with such an individual completion time limit.

11. Method (500) according to claim 1, the method comprising the steps of:

receiving a plurality of n scanning commands, and placing these scanning commands in a queue buffer memory (501, 502, 503);

calculating (511), for each of all $2^n \cdot n!$ possible combinations of individual scanning mode settings (CAV, CLV) and possible execution orders of these n scanning commands, the corresponding estimated amount of energy ($E_{EX}(i)$) consumed when these n scanning commands are executed in the respective execution order(i), using the respective combination of individual scanning mode settings (CAV, CLV) for these n scanning commands;

determining (512) which combination of individual scanning mode settings (CAV, CLV) and execution order of these n scanning commands is most energy-efficient;

executing (521) these n scanning commands using the most energy-efficient combination of individual scanning mode settings (CAV, CLV) and execution order.

12. Method according to claim 11, wherein the set of n scanning commands is associated with an overall completion time limit, and wherein, in the step of determining (512) the most energy-efficient combination of individual scanning mode settings (CAV, CLV) and execution order, only those combinations are taken into account which comply with such an overall completion time limit.

13. Method according to claim 11, wherein at least one of the scanning commands is associated with an individual completion time limit, and wherein, in the step of determining (512) the most energy-efficient combination of individual scanning mode settings (CAV, CLV) and execution order, only those combinations are taken into account which comply with such an individual completion time limit.

14. Disc drive apparatus (1) for writing information to a storage medium (2) and/or for reading information from a storage medium (2), capable of selectively operating in at least a CAV mode and at least a CLV mode, the disc drive apparatus (1) being adapted to execute the method of any of the previous claims.